Pro 200 Series Furnace
Operators Manual

Pro 200

Pro Press 200

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Warnings

DO NOT OPERATE THIS FURNACE WITH ANY OTHER POWER CORD.

DO NOT OPERATE WITH AN EXTENSION CORD.

OPERATING THIS FURNACE ON A CIRCUIT WITH OTHER FURNACES OR ELECTRICAL APPLIANCES THAT REQUIRE SIGNIFICANT POWER MAY CAUSE A CIRCUIT BREAKER TO TRIP.

WHEN OPERATING THE PRO 200, USE ONLY ARGON GAS. ATTACHING ANY FLAMMABLE OR NOXIOUS GAS IN THIS FURNACE COULD CAUSE EXPLOSION OR PERSONAL INJURY!

CAUTION: METAL SURFACE IS HOT DURING OPERATION!

IMPORTANT: CONTACT YOUR DEALER OR THE FACTORY FOR COMPLETE INSTRUCTIONS ON CONVERTING THE FURNACE BETWEEN 115 VAC AND 220 VAC.

Warranty

United States and Canada

Whip Mix Corporation warrants the Pro 200 and Pro Press 200 to the original purchaser against defective workmanship and materials under normal procedures of installation, use and service within the dental profession, for a period of three years or 3750 muffle hours, whichever occurs first. During which time Whip Mix Corporation will replace, repair or deny warranty coverage at its discretion. Heat treating refractory materials, misuse, improper installation, improper maintenance, accident or abuse will void the warranty. Whip Mix coverage only applies to Whip Mix supplied parts, and repairs performed by Whip Mix certified repair technicians. Repairs performed during the warranty period do not extend the warranty period. Shipping damage is only covered from Whip Mix to the intended recipient.

International

Two years parts and labor from date of purchase from dealer.

Recommendations

Note: During shipping the muffle might absorb moisture from the air. So, it is recommended you heat the muffle to dry the moisture before firing any porcelain. To dry the muffle, set the idle temperature to 400° C (752° F) for one hour and 600° C (1112° F) for one hour.

Follow the numbered instructions in this section to set the ideal temperature to the temperatures mentioned above. Whip Mix recommends leaving the furnace on at all times.

Turning the furnace off overnight may cause damage to the muffle, contamination and void the warranty.

Leaving your furnace on will also extend the life of your furnace. See Night Mode, page 11 for further information.

The Pro Series Furnace comes complete with:

Pro Press 200	Pro 200
Manual	Manual
Cooling Tray	Cooling Tray
Firing Tray	Firing Tray
Press Firing Tray	Power Cord
Power Cord	Temperature Calibration Certificate
Temperature Calibration Certificate	Flash Drive
Ceramic Insert	Quick Start Guide & DVD
Press Air Regulator	Warranty Registration Card
Flash Drive	Tip sheet
Quick Start Guide & DVD	Program Magnet
Warranty Registration Card	Quick Cool Barb and Hose
Tip Sheet	Master Suite DVD
Program Magnet	
Quick Cool Barb & Hose	
Master Suite DVD	

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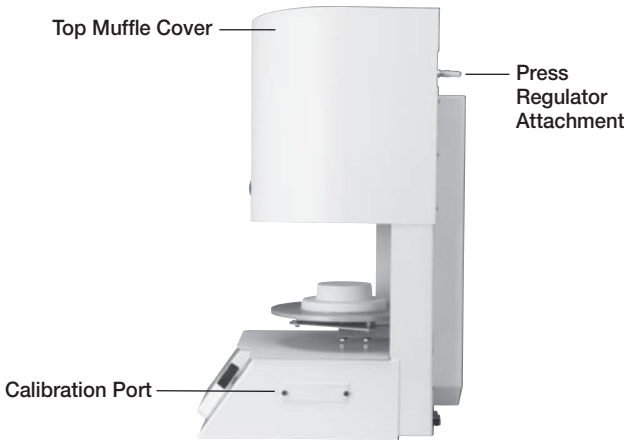
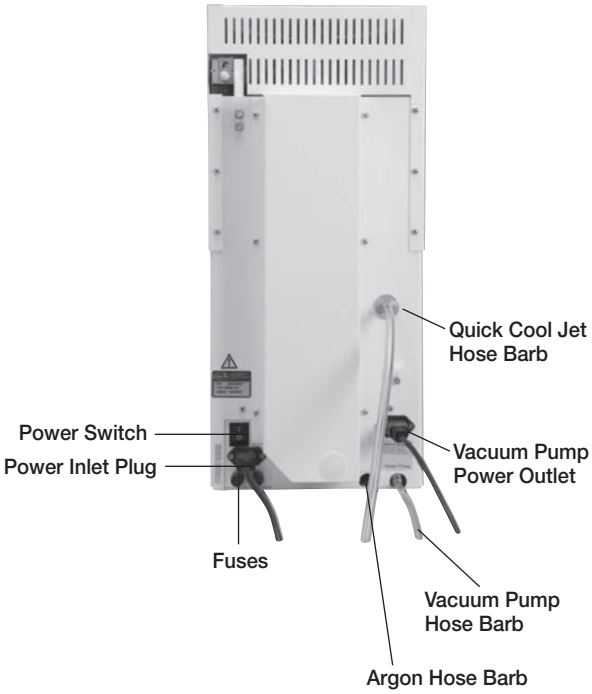
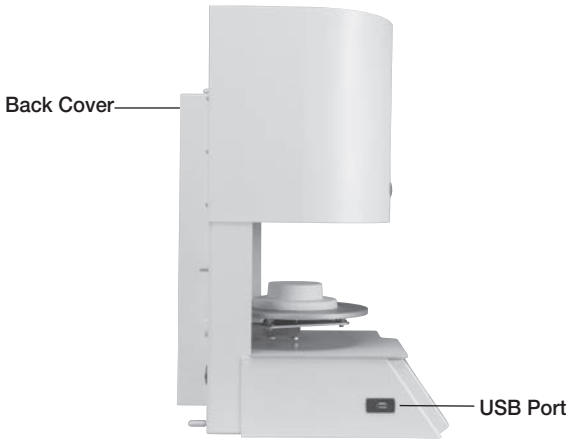
External Component Locator







Chapter One — Getting Started

You are undoubtedly eager to unpack, set up, and begin using your new furnace. Getting started will be much easier if you carefully review the information in this chapter and follow the steps as outlined.

Before Unpacking

- Save the carton and packing materials. These will be used again if there is ever a need to ship or return equipment.
- Read and save the printed shipping material packed with your furnace — it contains valuable information!
- **DO NOT turn on the power to your furnace until you are instructed to do so, or you will damage your furnace!**

Unpacking

- If the packaging materials and/or the furnace appear to be damaged, please call your dealer before continuing.
- Remove the furnace from the packing materials and place it on a flat surface in the upright position.
- Look up into the muffle area and locate the orange shipping bar and wing nuts. Remove the wing nuts, push the two bolts and attached brackets out of the orange bar. Finally remove the orange bar by sliding it out sideways. Keep these parts in case there is a need to ship the furnace back.

Press Version

- Connect the compressed air supply to the regulator using a standard pneumatic fitting available at most hardware stores.
- Adjust the pressure regulator to the recommended pressure from the ceramic manufacturer.

If problems arise:

- Check the air supply for sufficient pressure.
- Check all connections. If problems persist, write down your serial number and call Technical Support.

Press Regulator Set-Up

The Pro Press 200 requires compressed air to run a press cycle. Generally minimum air pressure of 63 psi/4.25 BAR and a maximum of 150 psi/10 BAR. Check with the ceramic manufacturer.

INPUTTING MORE PRESSURE COULD CAUSE AN EXPLOSION!

- Remove the regulator from the accessory box.
- Look at the female end of the brass quick connect and check for obstructions or foreign objects.

- With the clear plastic portion facing down, push the regulator onto the quick connect fitting at the back of the furnace, as shown. Make sure the quick connect is fastened.
- Connect the compressed air supply to the regulator using a standard pneumatic fitting.

If problems arise:

- Check the air supply for sufficient pressure.
- Check all connections.

If problems persist, write down your serial number and call Technical Support.

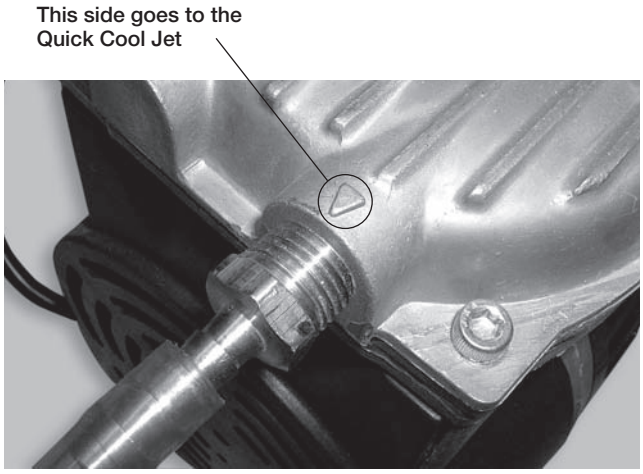
Installing the Vacuum Pump

If you have a Whip Mix vacuum pump, plug it directly into the furnace where indicated on the back. If the pump is not a Whip Mix pump, you will need an adaptor.

- Attach a 1/4" inch vacuum rated hose from the vacuum pump to the brass fitting marked **VACUUM PUMP** at the rear of the furnace.

DO NOT attach the Argon gas system to the **Pro 200** until the furnace is installed, operating, and the setup procedures in the **Special Functions** chapter of this manual have been completed.

Quick-Cool Jet Installation for Pro 200 Furnaces with Air Cool Jet

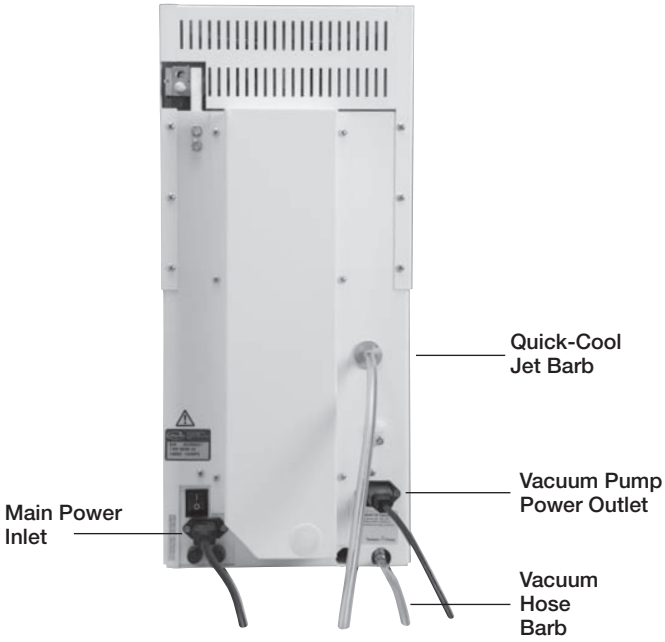


Preparation:

1. Remove the vacuum pump from its box.
2. Remove the brass hose barb from the Furnace accessory box.
3. Remove the muffler from the output end of the vacuum pump. (The input and output valves are identified by arrow indicators on the vacuum pump near inlet or outlet.)
4. Install the brass barb to output end of the vacuum pump. (Where the muffler used to be.)
5. There should be two hoses included. One in the accessory box, the other inside the vacuum pump box. Use the hose included in the accessory box for the Quick-Cool Air Jet.

Installation:

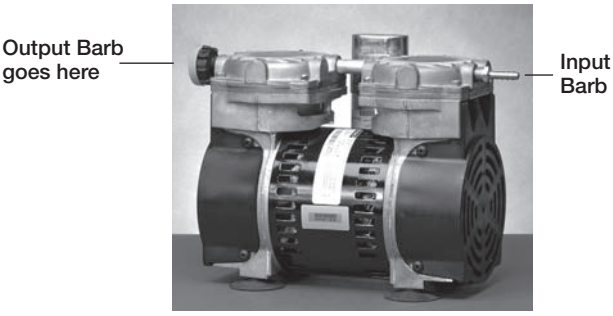
1. Push one end of the clear hose included in the accessory box over the output barb fitting at the output end of the vacuum pump.
2. Place the other end over the silver Quick-Cool Jet barb located on the upper right back of the furnace. (See below.)
3. Using the other pink hose, place one end over the input side barb of the vacuum pump.
4. Place the other end over the vacuum barb at the back of the furnace.
5. Plug the power cord into the power outlet at the back of the furnace next to the furnace power inlet.



Using the Quick-Cool Jet:

The Quick-Cool Jet will activate when a program has been started with a lower entry temperature than the furnace's current temperature.

1. To enable the Quick-Cool Jet, select and run a program with an entry temperature lower than the current temperature.
2. Once a program is complete, start the next program and the Quick-Cool Jet will engage.

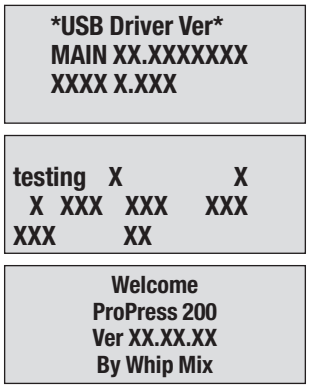


Power

- The furnace requires 115 Vac and 12 Amps of current in the United States and 220–240 Vac and 6.3 Amps of current in Europe and some parts of Asia. **A special heavy-duty power cord has been supplied with your furnace.**

DO NOT OPERATE WITH ANY OTHER POWER CORD. DO NOT OPERATE WITH AN EXTENSION CORD. OPERATING THIS FURNACE ON A CIRCUIT WITH OTHER FURNACES OR ELECTRICAL APPLIANCES THAT REQUIRE SIGNIFICANT POWER MAY CAUSE A CIRCUIT BREAKER TO TRIP OR OTHER FUNCTION PROBLEMS WITH THE FURNACE. INSTALL THE HEAVY-DUTY POWER CORD AND PLUG THE FURNACE INTO A GROUNDED OUTLET.

- Position the furnace so that the front is facing you. You should be able to reach the power switch on the right side of the furnace at the rear. Be sure to have at least 8 inches on all sides of the furnace to allow sufficient airflow to keep the electronics of the furnace cool. Do not place anything flammable near the furnace.
- Turn the furnace on using the power switch. The display should light up and the unit will perform an internal self test for about 30 seconds. The following screens will be displayed in this process.



NOTE: THE ACTUAL VERSION NUMBER OF YOUR FURNACE WILL REPLACE X.XX.XX IN THE ABOVE ILLUSTRATION.

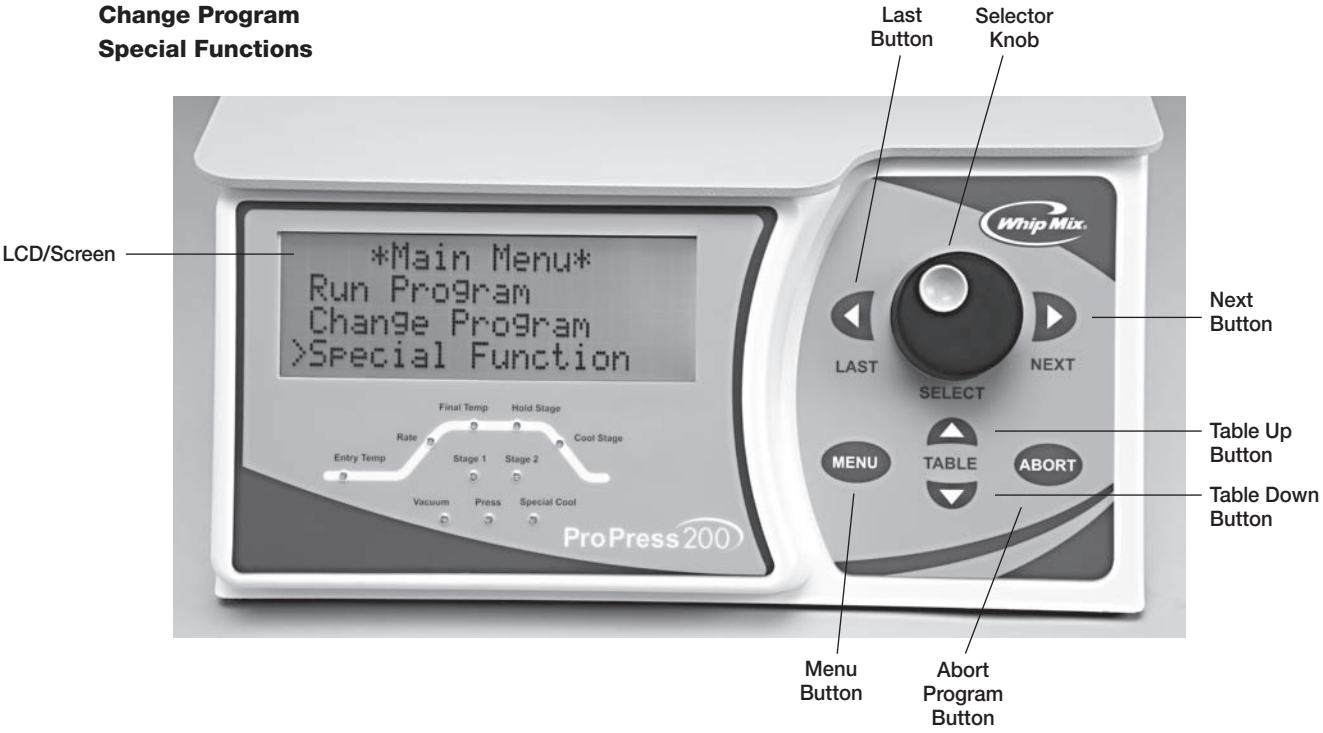
NOTE: THE QUICK START GUIDE PROVIDES AN EASY, STEP BY STEP, SEQUENCE FOR RAPID SETUP AND INITIAL CONFIGURATION AND RUNNING YOUR FIRST PROGRAM.

Front Panel Controls

The front panel controls and their basic functions are described in this section. **Please read this section carefully.**

The front panel controls are divided into four groups:

- Menu selection button calls up various function selections:
  - **Run Program**
  - **Change Program**
  - **Special Functions**
- Information entry: **Selector Knob, Next** and **Last**
- Program **Abort** button
- Table control buttons: **Up/Down**



Menu Selection Buttons

The three menu selection items (Run Program, Change Program and Special Functions) will display different options. The menu options can be seen by turning the **Selector Knob**.

Run Program — Press the **Run Program** Selection to:

- Select a program to run.

Change Program — the following actions may be initiated by first pressing the **Change Program** item from the **Main Menu**, then turning the **Selector Knob** to display the following options:

- Look at a program
- Add/Edit a program
- Copy/change a program
- Move a program
- Erase a program

Special Functions — press the **Selector Knob** and turn the **Selector Knob** to one of the following actions:

- Start Night mode
- Change Idle temperatures
- Set vacuum level
- Select degree C (Centigrade, centimeters), or F (Fahrenheit, inches)
- Set program start delay
- Set Night mode temperature
- Select between constant vacuum pump or intermittent cycle vacuum pump
- Change volume level of sounds
- Select upper or lower case letters on the display
- Select Displayed Language (English, French, German, Italian, Spanish)
- Cal Low Fusing
- Cal High Fusing
- Cal Press (On Pro Press Only)
- Copy firing programs from Furnace to Memory Card (Export Programs)
- Copy firing programs from Memory Card to Furnace (Import Programs)
- Export Settings
- Import Settings
- Test Furnace
- Calibrate Oven

Information Display and Entry

DISPLAY — All information and user prompts will be shown on the display (four lines, twenty characters each).

SELECTOR KNOB — Turn the **Selector Knob** left or right to select menu options or to adjust parameters.

NEXT — Press the **Next** button to proceed to the next step within a function or program. (OR just push the **Selector Knob** inward to proceed).

LAST — Press this button to return to the preceding step within a function or program. If a program is not displayed then the furnace will beep to indicate an error.

TABLE UP — Press the ⬆ **up** arrow button to manually raise the table. Press the ⬆ **up** arrow button a second time and the table will stop.

TABLE DOWN — Press the ⬇ **down** arrow button to manually lower the table. Press the ⬇ **down** arrow button a second time and the table will stop.

The table control button will not operate while a program is running.

Start Program

- Immediately After Power-On Self-Test Completes — Rotate the **Selector Knob** to select a Program, then press the **Selector Knob** to initiate the Program.
- Immediately After a Previous Program Completes — Pressing the **Selector Knob** after a program has just finished will restart the same program. Or rotate the **Selector Knob** to a new Program selection and press the **Selector Knob** to initiate the Program.

Abort Program

- Press the **Abort** key on the Keypad. The temperature will begin dropping to Idle temp and the Table will automatically lower.

Using the Furnace

After the furnace has completed the self-test at power up, the Firmware Version appears on the screen, then the Display prompts the entry of a Program number for firing. Press the **Menu** button to bring up the **Main Menu**, then Select the **Special Functions** menu item and proceed with the initial setup of essential default values for functions like:

- Idle Temperature
- Vacuum Threshold Level for Intermittent Vacuum mode
- Temperature Display Units (C or F)
- Program Start Delay Time (Default is none)
- Night Mode Temperature
- Constant Vacuum Pump
  (Default is “NO” for Intermittent Vacuum)
- Sound Volume Adjust
- Capital Letter Display (Default is mixed upper and lower case display)
- Displayed Language

NOTE: IT IS VERY IMPORTANT TO SET UP THE OPERATING FEATURES OF THE FURNACE BEFORE YOU ATTEMPT TO PROGRAM THE FURNACE OR RUN PROGRAMS. FOR BEST RESULTS IN LEARNING TO USE YOUR NEW FURNACE, USE THE FOLLOWING STEPS, IN THIS ORDER:

1. Set up the operating features of the furnace by reading and following the instructions in **Chapter 2 — Special Functions**. This is **VERY IMPORTANT** because these operating features will affect how you enter and run programs.
2. Learn to program the furnace by reading **Chapter 3 — Change Program.** Enter a few of your own programs.
3. Read **Chapter 4 — Run Program** to understand how to run programs and what features are available while running a program.

Chapter Two — Special Functions

To look at or change a function, press the **Special Functions** item from the **Main Menu**. Turn the **Selector Knob** clockwise or counterclockwise until the desired function is displayed. Press the **Selector Knob** OR the **Next** button to look at or change this function. Each function will be described in this chapter.

Most Special Functions can be performed while a program is running, however this is not recommended because changing the operating features could affect how the current program runs.

Setting the Night Mode Temperature and Activation

The furnace has a **Night Mode** feature that will reduce the temperature in the muffle and raise the lift to prevent moisture build up.

The **Night Mode** can be started from **idle mode** or while a program is running.

The furnace will automatically enter **Night Mode** if no buttons have been pressed for 2 hours, or 45 minutes have passed since the last run program and no buttons have been pressed.

The furnace comes from the factory with the **Night Mode** temperature set at 150° C (302° F). This temperature may be adjusted from 0 to 400° C (752° F).

If **Night Mode** is activated while a program is running, the furnace will go to the **night mode** temperature after the completion of the program and will maintain the **Night Mode** temperature until any button is pressed or the power is turned off.

To adjust the **Night Mode** temperature:

1. From the **Main Menu**, press the **Special Functions** item.
2. Turn the **Selector Knob** until the display reads **NIGHT MODE TEMP.**
3. Press the **Next** button to look at or change the night mode temperature.
4. Turn the **Selector Knob** to change the temperature as desired.
5. Press the **Next** button to enter the temperature. You will be returned to the **Main Menu** automatically.

After the **Night Mode** Temperature has been set, follow these steps to activate night mode from **idle mode** or during a program.

1. From the Main Menu, select the **Special Function** item. Turn the **Selector Knob** to the displayed item **Night Mode.**

2a. Push the **Selector Knob** OR press the **Next** button to activate **Night Mode.**

2b. To start **Night Mode** at the end of the program while a program is running.

Turn the **Selector Knob** to **NEXT** = **NIGHT MODE** and press the **Selector Knob** or **Next** button.

```
* Special Functions
> Night Mode
  Change Idle Temp
  Set Vacuum Level
```

Change Idle Temperature

The idle temperature is the temperature the furnace will maintain between programs. The furnace comes from the factory with the idle temperatures set at 0° C, so you must enter a temperature for this feature to suit your needs.

1. Press the **Menu** button.
2. Select **Special Functions**, push **Selector Knob** OR press **Next** button
3. Turn the **Selector Knob** to display **CHANGE IDLE TEMP.**
4. Push **Selector Knob** OR press the **Next** button to look at or change the idle temperature.
5. The current setting will be displayed. Turn the **Selector Knob** to change to the desired temperature.
6. Push the **Selector Knob** OR press the **Next** button to enter the temperature. You will be returned to the Main Menu automatically.

NOTE: DURING SHIPPING THE MUFFLE MIGHT ABSORB MOISTURE FROM THE AIR. SO, IT IS RECOMMENDED YOU HEAT THE MUFFLE TO DRY THE MOISTURE BEFORE FIRING ANY PORCELAIN. TO DRY THE MUFFLE, SET THE IDLE TEMPERATURE TO 400° C (752° F) FOR ONE HOUR AND THEN 600° C (1112° F) FOR ONE HOUR. IT IS ALSO RECOMMENDED YOU KEEP THE FURNACE ON WITH SUFFICIENT NIGHT MODE TEMPERATURE TO PREVENT MOISTURE FROM ACCUMULATING INSIDE THE MUFFLE. THE RECOMMENDED TEMPERATURE IS A MINIMUM OF 150° C (302° F). IF LEAVING THE LAB FOR AN EXTENDED PERIOD OF TIME, YOU MAY TURN THE FURNACE OFF WITH THE TABLE IN THE CLOSED POSITION. BEFORE FIRING PORCELAIN AGAIN, GO THROUGH THIS DRY OUT PROCEDURE.

Set Vacuum Level

The factory setting for vacuum is 71 cm of mercury. The acceptable range is from 22 cm to 74–75 **cm of mercury** or 11.0 inches to 30.0 **inches of mercury.**

If the furnace does not pull a minimum vacuum of 10 inches within 20 seconds of calling for it, the program will be aborted and the furnace will display "Vacuum Error."

Additionally, if the target vacuum level has not been reached within 1.5 inches of the vacuum setting by 100 seconds, the program will be aborted and a warning screen will be displayed, indicating a vacuum error. (see page 31 for error codes)

If Continuous VAC Pump has been selected by using the Special Functions menu, the vacuum pump will run throughout the vacuum cycle at full vacuum. If Continuous VAC Pump has not been selected, the vacuum pump will shut off after the target level has been reached and at least 5 seconds have elapsed. The vacuum pump will be restarted when the vacuum level has dropped to 1 inch below the Vacuum setting value.

The furnace uses an **absolute vacuum sensor**. With an absolute sensor, vacuum adjustments are not necessary at high altitudes.

To set the vacuum level for all programs do the following:

1. Press the **Menu** button.
2. Select **Special Functions**, push **Selector Knob** OR press **Next** button.
3. Turn the **Selector Knob** until **SET VACUUM LEVEL** is displayed.
4. Push **Selector Knob** OR press the **Next** button to look at or change the vacuum level.
5. The current setting will be displayed. Turn the **Selector Knob** to change this value.
6. Push **Selector Knob** OR press the **Next** button to accept the new value. You will be returned to the Main Menu automatically when the **Selector Knob** or **Next** button is pushed. The furnace may be set to display all values using the metric system with degrees in Centigrade and vacuum in centimeters of mercury OR to display all values using the American/English (standard) system of degrees. Fahrenheit and vacuum in inches of mercury.

Select Constant Vacuum

Selecting constant vacuum will cause the vacuum pump to run continuously during the vacuum cycle of a program.

1. Press the Main **Menu** button.
2. Select Special Functions, push the **Selector Knob** OR press the **Next** button.
3. Turn the **Selector Knob** until the display reads **CONSTANT VAC PUMP.**
4. Push the **Selector Knob** OR press the **Next** button.
5. Turn the **Selector Knob** to display **YES** or **NO.** A selection of yes will cause the vacuum pump to run continuously during the vacuum cycle of a program.

A selection of no will allow the vacuum pump to turn off and on to maintain the set vacuum level.

NOTE: IF INTERMITTENT VACUUM IS SELECTED, BUT THE VACUUM PUMP RUNS CONTINUOUSLY DURING THE PROGRAM CYCLE, THE VACUUM LEVEL IS SET TOO HIGH. THE ACTUAL LEVEL IS WITHIN 3% OF THE SELECTED LEVEL, BUT THE PUMP CANNOT REACH THE FULL SELECTED LEVEL. THIS CAN BE CORRECTED BY REDUCING THE VACUUM LEVEL.

Set Displayed Temperature Units (Celsius or Fahrenheit)

1. Press the **Menu** button.
2. Select **Special Functions**, push the **Selector Knob** OR press the **Next** button.
3. Turn the **Selector Knob** until **TEMP IN C OR F?** is displayed.
4. Push the **Selector Knob** OR press the **Next** button to look at or change the measurement system in use.
5. **TEMP CENTIGRADE?** Will be displayed. Turn the **Selector Knob** to select **YES** for metric Centigrade units, or if you select **NO** the furnace will automatically set to Fahrenheit units (American/English) (standard) units.
6. Push the **Selector Knob** OR press the **Next** button to save the selection. You will be returned to the **Main Menu** automatically.

Set Program Start Delay

The furnace has a unique feature that allows the operator to program a delay to occur before the start of all programs. This delay occurs before the entry time set into each program begins. This feature may be changed without affecting the programs or calibrations stored in the furnace.

1. Press the **Main Menu** button.
2. Select **Special Functions**, push the **Selector Knob** OR press the **Next** button.
3. Turn the **Selector Knob** until the second line on the display reads **PROG START DELAY.**
4. Press the **Next** button to look at or change the start delay time.
5. The display will read **TIME = 0.00** or any time delay previously entered. Turn the **Selector Knob** to change the time as desired.
6. Push the **Selector Knob** OR press the **Next** button to save your selection. You will be returned to the Main Menu automatically.

NOTE: THE DELAY FEATURE SUBTRACTS FROM THE TIME IT TAKES TO HEAT THE MUFFLE TO THE ENTRY TEMPERATURE SO THE DELAY TIME MAY APPEAR SHORTER THAN ORIGINALLY PROGRAMMED. AS AN EXAMPLE; LET'S ASSUME THE DELAY IS SET FOR 30 MINUTES, THE ENTRY TEMPERATURE IS 500° C, AND THE TIME IT TAKES THE FURNACE TO REACH 500° C FROM THE POINT WHICH YOU ENTERED THE DELAY IS 15 MINUTES. THE FURNACE WOULD COUNT DOWN 15 MINUTES TO THE BEGINNING OF THE PROGRAM AND THEN WOULD BEGIN HEATING TO THE ENTRY TEMPERATURE. THIS GIVES US A TOTAL OF 30 MINUTES BEFORE THE TABLE RISES TO THE MUFFLE.

Set Music Volume Level

1. Press the **Special Functions** button.
2. Turn the Selector Knob until display reads **CHANGE MUSIC VOLUME.**
3. Push the **Selector Knob** OR press the **Next** key. Continue to turn the **Selector Knob** to the desired volume. The cursor will appear to the left of the volume selected:
4. Rotate the **Selector Knob** and a sequence of tones will begin playing to give you an audible reference for the corresponding sound level. When the volume level is set to your liking, push the **Selector Knob** OR press the **Next** button to save your selection. You will be returned to the Main Menu automatically.

Set to All Capital Text or Mixed Upper/Lower Case Text Display

1. Press the **Special Functions** button.
2. Turn the **Selector Knob** until display reads **CAPITAL LETTER?**
3. Push the **Selector Knob** OR press the **Next** button.
4. If you want all Capital Letters displayed, rotate the **Selector Knob** to **Yes** and push the **Selector Knob** OR press the **Next** button. If you do not want all Capital letters, rotate to **No** for mixed upper/lower case letters and press the **Selector Knob** OR press the **Next** button.

Select Displayed Language

1. Press the **Special Functions** button.
2. Turn the **Selector Knob** until the display reads **SELECT LANGUAGE.**
3. Push the **Selector Knob** OR press the **Next** button.
4. Choose from the following list of languages:
   > English
   Francais
   Deutch
   Italiano
   Espanol
5. Rotate the **Selector Knob** until the cursor points to the desired language and push the **Selector Knob** OR press the **Next** button to save your selection. You will be returned to the Main Menu automatically.

Saving Programs to a Flash Drive (Exporting)

1. Place the Flash Drive in the USB slot on the left side of the furnace with the shiny metal contact facing upward.
2. Select the **Special Functions** item from the Main Menu.
3. Turn the **Selector Knob** until the display reads **EXPORT PROGRAM**, then press the Next button.
4. The display will show **Check USB Driver**, then **Exporting >>>>>>>**
5. The furnace will signal the end of the transfer with an audible tone.

Transferring User Firing Programs to Other Furnaces (Importing)

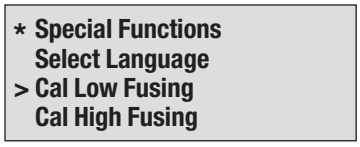
Once you have exported programs to the Flash Drive, either via the furnace EXPORT PROGRAM function OR via the PC Software, you can load these programs on a different furnace or return them to the same furnace.

1. Place the Flash Drive in the USB slot on the left side of the furnace with the shiny metal contact facing upward.
2. Select the **Special Functions** item from the Main Menu.
3. Turn the **Selector Knob** until the display reads **IMPORT PROGRAM**, then press the **Next** button.
4. The display will show **Check USB Driver**, then **Importing >>>>>>>**
5. The furnace will signal the end of the transfer with an audible tone.

Low Fusing Adjust

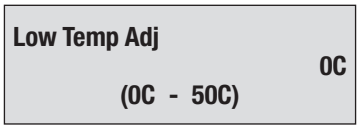
Calibration (800° C/1470° F or below)

1. Select the **Special Functions** item from the Main Menu.
2. Turn the **Selector Knob** until display reads **CAL LOW FUSING.**



3. Press the Next button. The display will ask **LOW OVERFIRES?**

4. Turn the Selector Knob to display either **YES** or **NO**. Selecting **YES** will allow you to adjust for low-fusing porcelain overfires. Selecting **NO** will allow you to adjust for low-fusing porcelain underfires.
5. Press the **Next** button.
6. Turn the **Selector Knob** to enter the number of degrees you would like to adjust the temperature. If **YES** was selected in the previous step, this value will adjust the temperature downward. If **NO** was selected, this will adjust the temperature upward.



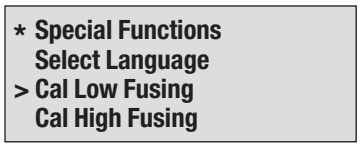
7. Press the **Next** button. The adjustment will be stored and you will be returned to the main menu.

Example: If your porcelain appears to be overfired by 25°, you would answer **YES** to question 3, then turn the Selector Knob to 25° and Press the **Next** button. This will decrease the temperature of the furnace by 25°. Now, fire again. If your porcelain now appears to be underfired by 10° after having made the 25° temperature down adjustment, you would again answer **YES**, then change the 25° to 15° which will increase the last firing temperature by 10°. Fire again, if the porcelain appears to be fired correctly.

High Fusing Adjustment

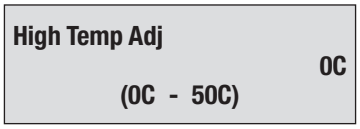
Calibration (800° C/1470° F or above)

1. Select the **Special Functions** item from the Main Menu.
2. Turn **Selector Knob** until display reads **CAL HIGH FUSING.**



3. Press the **Next** button. The display will ask **HIGH OVERFIRES?**

4. Turn the Selector Knob to display either **YES** or **NO**. Selecting **YES** will allow you to adjust for high-fusing porcelain overfires. Selecting **NO** will allow you to adjust for high-fusing porcelain underfires.
5. Press the **Next** button. (Value will adjust the temperature upward.)
6. Turn the **Selector Knob** to enter the number of degrees you would like to adjust the temperature. If **YES** was selected in the previous step, this value will adjust the temperature downward. If **NO** was selected, this will adjust the temperature upward.



7. Press the **Next** button to accept the displayed value. The adjustment will be stored as on the previous section.

Example: If your porcelain appears to be overfired by 25°, you would answer **YES** to question 3, then dial to 25° and press the **Next** button. Now, fire again. If your porcelain appears to be underfired by 10° after making the 25° adjustment, you would again answer **YES**, then change the 25° to 15°.

Testing Your Furnace

The Pro Series Furnaces are capable of performing several tests to aid in diagnosing the furnace should a problem occur. A TOPS technician or Technical Support technician may ask you to run one or more of these tests to aid in diagnosing the problem. The tests include:

- Vacuum test
- Muffle test
- Motor Up test
- Motor down test
- Muffle hour reading. (The muffle hour reading is incremented by 1 for each hour the muffle temperature is above 605° C.)
- Press test (in ProPress 200)

To Begin Test:

1. Select the **Special Functions** item from the Main Menu.
2. Turn the **Selector Knob** until the display reads **TEST FURNACE.**
3. Push the **Selector Knob** OR press the **Next** button.
4. Turn the **Selector Knob** until the test you require is displayed.
5. Push the **Selector Knob**. (The individual test, which was selected, will now begin.)
6. Pressing the **Next** button will pause the test. Pressing the **Next** button again will restart.
7. Pressing the **Menu** button will end the test and return you to the Main Menu.

Calibrate Oven

CAUTION: THIS ITEM OF THE SPECIAL FUNCTIONS MENU IS TYPICALLY RESERVED FOR WHIP MIX CERTIFIED TECHNICIANS. ENTERING NUMBERS OTHER THAN THE FOUR DESCRIBED BELOW COULD RESULT IN PROGRAM AND CALIBRATION LOSS.

With this screen it is possible to activate the following features:

- **Fast Cool With Vacuum On (for cooling muffle to entry temp between programs)** Lowers the lift and runs the vacuum pump until the furnace reaches the entry temperature for a program. To activate this function, start a program with an entry temperature lower than the current temperature.
- **Enable Program Password Protection** (Call Whip Mix TOPS Technicians.)
- **On Pro Press 200;** use Timed Press; Yes/No Changes preference between Re-Press and Timed Press, press programs are factory set and include vacuum.
- **Load Code from "Flash Drive"** Enables you to order and upgrade software.

To access one of the four functions, do the following:

1. Select the **Special Functions** item from the Main Menu.
2. Turn the **Selector Knob** to **CALIBRATE OVEN.**
3. Push the **Selector Knob** OR press the **Next** button.
4. Turn the **Selector Knob** to select the numerical password needed.

Password Function	Numbers
1. Fast Cool with Vacuum On	Password 315
2. Enable Program Password Protection Protects all programs from alteration	(Call Whip Mix TOPS Technician)
3. Select Timed Press or Re-press Time If Yes is selected, then you will be prompted to enter the Repress Time. In this program 4 minutes will automatically be added to the time you enter. The default program is timed press which does not add and additional 4 minutes.	Password 315
4. Load code from Flash Drive	(Call Whip Mix TOPS Technician)

Push the **Selector Knob** OR press the **Next** button. Enter the password and access the selected function.

Chapter Three — Change Program Menu

The Master Suite DVD provided with the furnace is an alternate means of adding or editing programs using a PC application. A memory stick is then used to transfer the programs from the PC to the furnace. Refer to the separate instructions provided in pdf format on the DVD.

The **Change/Edit Program** menu item allows you to add, change, move, copy, print, or erase programmed firing cycles. This mode is reached by selecting the **Change/ Edit Program Item** from the **Main Menu**.

All of the features described here may be performed while a program is running. Both the Pro 200 and Pro Press 200 furnaces use a unique method of numbering and naming programs to help the operator select the correct program to run.

The Program Number is shown first (0-199), followed by the Program Name.

The following is an example of a program descriptor. The Program Number is displayed first, then a "-" character. The next fifteen characters contain the name entered to describe this program.

```
12 STNS- Body Add
```

In the example, the user has entered **BODY ADD** to indicate that this is a body add-on program. The following examples show how a user could make program identification easy:

12 SYNS- BODY ADD	[Synspar porcelain body add program]
13 SYNS- GLAZE	[Synspar porcelain glaze program]
20 VITA- DE GAS	[Vita porcelain de-gas program]

Look at a Program

The Look at a Program feature allows the operator to view a program without changing any values:

1. Select the **Change Program** from the **Main Menu**.
2. Turn the **Selector Knob** until **LOOK AT PROGRAM** is displayed.
3. Push the **Selector Knob** OR press the **Next** button to select this feature.
4. Turn the **Selector Knob** to find the program you wish to view.
5. Push the **Selector Knob** OR press the **Next** button to continue viewing each step through the program.

```
* Look At Program *
Dry Time          10:00
Entry Temp         450C
Press Knob = Continue
```

The first line displays a parameter in the firing cycle program and its value.

This firing parameter cannot be changed while looking at a program.

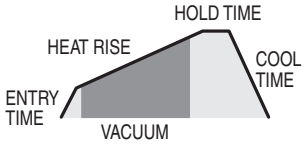
Pushing the **Selector Knob** OR pressing the **Next** button will let you look at the next parameter in a program. Pressing the **Last** button will let you look at the preceding item in a program.

```
* Look At Program *
Rate Rise          45C/M
Hold Temp           940C
Hold Time       00:01:00
```

When the last item in a program has been viewed the display will return to the **Main Menu**.

Add/Edit a Program

Add/Edit a Program is used to enter a new program or Edit a pre-existing program. This selection will describe how to enter either a 1-Stage or a 2-Stage program.



The first four firing cycles are normal porcelain firing cycles. The following procedure describes how to enter a normal porcelain program.

1. Press the Main **Menu** button.
2. Select the **CHANGE PROGRAM** item and push the **Selector Knob** OR press the **Next** button.
3. Turn the **Selector Knob** until **ADD/EDIT PROGRAM** is displayed.
4. Push the **Selector Knob** OR press the **Next** button. A cursor pointing to the current program number will be displayed. If there is a name displayed after the program number this is a pre-existing program which you may edit by selecting it.
5. To Add a program, rotate the **Selector Knob** to find the program number to which you want to add your new program. If you select a program number that already has a program entered, you will overwrite the existing program with the new one by entering new values.

```
Select Program
> 001–

Press Knob = Continue
```

6. Push the **Selector Knob** OR press the **Next** button to select a program for **Addition** or **Editing**. The display will present the "stage" type selection as below:

```
Select Type
> 1–stage
  2–stage
  Press
```

   If the program you wish to Add requires only a single Rate Rise and Hold Temperature, select 1-Stage. If the program requires an initial Rate Rise and Hold Temperature, followed by a secondary Rate Rise and Hold Temperature, select 2-Stage.

   Push the **Selector Knob** OR press the **Next** button to select the program type.

7. The display will change as shown below:

```
     * Add/Edit Program *
Enter Program Name
 001 –
```

   The ^ symbol under the line identifies the current character position being entered. Rotate the **Selector Knob** to bring up the desired character, then push the **Selector Knob** OR press the **Next** button to advance to the next character in the Program Name. You may enter up to 15 characters. If you do not require all 15 characters then simply hold down the **Next** button to space through the unneeded characters or press the **Selector Knob** and jump to the first Parameter entry screen.

8. Dry Time Entry

   Dry Time is the time it takes the table to go from the full down/open position to the table up/closed position. This will occur with several pauses in up motion during the travel to allow the work piece to dry gradually.

   The range of values is 00 minutes, 00 seconds, to a maximum of 99 minutes.

   Rotate the **Selector Knob** to select the time value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

```
     * Add/Edit Program *
Dry Time              00:03:00

     (00:00:00–01:39:00)
```

9. Entry Temperature

   Entry Temperature is the temperature at which the table is closed completely and the temperature rise begins.

   The range of values is 25° C (77° F) to a maximum of 980° C (1796° F).

   Rotate the **Selector Knob** to select the temperature value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

```
     * Add/Edit Program *
Entry Temp            400C

     (25C – 980C)
```

10. Rate Rise

    Rate Rise or ramp up, is the number of degrees per minute the temperature will rise after the table has closed.

    The range of values is 0° C/Minute (0° F) to a maximum of 100° C/Minute (180° F).

    Rotate the **Selector Knob** to select the heat rate value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

```
     * Add/Edit Program *
Rate Rise             40C/M

     (00C/M – 100C/M)
```

11. Hold Temperature

Hold Temperature or the top temperature is the final, highest temperature in a 1-Stage Program, and an intermediate stopover temperature in a 2-Stage Program.

The range of values is 400° C (752° F) to a maximum of 1200° C (2192° F).

Rotate the **Selector Knob** to select the temperature value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

```
* Add/Edit Program *
Hold Temp          920C

(400C – 1200C)
```

12. Hold Time

Hold Time is the length of time the furnace stays at the top Hold Temperature. If the Program is a 2-Stage Program, there will be separate Hold Times for both Hold Temperature 1 and Hold Temperature 2.

The range of values is 00 hours, 00 seconds, to a maximum of 18 hours.

Rotate the **Selector Knob** to select the time value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

```
* Add/Edit Program *
Hold Time          00:00:30

(00:00:00–99:00)
```

NOTE: IF YOU ARE ADDING A 2-STAGE PROGRAM, THE RATE RISE 2, FOLLOWED BY THE HOLD TEMPERATURE 2, AND THE HOLD TIME 2 PARAMETERS WILL APPEAR HERE. IF NOT, THE TABLE DOWN TEMPERATURE WILL APPEAR NEXT.

13. Program Fusing Adjustment Parameter

```
Add/Edit Program
Fuse Adjust
>No
```

IMPORTANT NOTE: THE FUSING ADJUSTMENT PROGRAM PARAMETER IS SIMILAR TO THE HIGH FUSING ADJUST AND LOW FUSING ADJUST FUNCTIONS FROM THE SPECIAL FUNCTIONS MENU IN THAT ANY VALUE ENTERED HERE WILL EITHER ADD TO, OR SUBTRACT FROM, THE HOLD TEMPERATURE PARAMETER IN THE PROGRAM. THE PROGRAM LEVEL FUSE ADJUST PARAMETER ADJUSTS THE HOLD TEMPERATURE ONLY FOR THE PROGRAM IT IS ENTERED IN, WHERAS THE SPECIAL FUNCTIONS/ HIGH FUSING ADJUST AFFECTS ALL PROGRAMS WITH A HOLD TEMPERATURE >800 C AND THE SPECIAL FUNCTIONS/LOW FUSING ADJUST AFFECTS ALL PROGRAMS <800 C.

Why do you need program fusing adjustments?

The Program level Fusing Adjust is useful for making minor adjustments to a single, specific Program without altering the original Program design.

All furnaces have individual firing characteristics, even with identical settings. The Special Functions High/Low Fusing Adjustment features are useful for matching the firing characteristics of two furnaces so that they fire identically.

At the initial Program Addition, you will want to use the original suggested Program parameters, until your experience suggests a Program specific adjustment is indicated.

Select either **UNDERFIRES** OR **OVERFIRES** by rotating the **Selector Knob**, then push the **Selector Knob** OR press the **Next** button and leave the default value of 0 Degrees, then push the **Selector Knob** OR press the **Next** button again. You can come back later and Edit the Program level Fusing Adjust parameter.

14. Table Down Temperature

The Table Down Temperature is the temperature at which the table will open after the Hold Time expires.

The range of values is 25° C (77° F) to a maximum of the final temperature.

Rotate the **Selector Knob** to select the temperature value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

15. Cool Time

The Cool Time parameter specifies the length of time the table takes to go from the full up position to the full down position, with several intermediate pauses along the way.

The range of values is 00 minutes, 00 seconds, to a maximum of 99 minutes.

Rotate the **Selector Knob** to select the time value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

```
* Add/Edit Program *
Cool Time          00:00:00

(00:00:00–99:00)
```

16. Use Argon*

Inert Argon gas may be required for firing or sintering metals like Titanium to prevent oxidation. If enabled; any time the table is closed and there is no vacuum present in the muffle, the argon valve will open to allow inert argon gas to flow into the muffle.

The default value for Use Argon is **NO**. If you wish to use Argon select **YES**.

Rotate the Selector Knob to select the setting, then push the **Selector Knob** OR press the **Next** button to store the parameter.

*Argon is only on the Pro 200 and the option will only show if it is enabled in the Special Function menu.

17. Use Vacuum

    The default value for Use Vacuum is **YES**.

    First, enter the Level of Vacuum desired. This is the value at which the pump will cut off if you are using Intermittent Vacuum (See Special Functions selections for choosing Intermittent or Constant Vacuum) If the value drops more than 2 cm of mercury lower than the value specified here during Intermittent Vacuum use, the vacuum pump will automatically start and run until the programmed Level is once again reached, then automatically cut off. This will occur as many times as required.

    The range of Vacuum Level settings is 28 cm of mercury to a maximum of 75 cm of mercury, although pumps weaken over time and usage. 71 cm of mercury is the default Level.

    Rotate the **Selector Knob** to select the vacuum value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

18. Start Vacuum

```
Add/Edit Program
Use Vacuum
>Yes
```

    This parameter controls when the vacuum pump comes on. The selections are made by rotating the **Selector Knob** as in the example below. The range will be different depending on the values already put into the program.

• Rate Rise (1)	Range: 406 C to 900 C
• Hold Time (1)	Range: 0 to 30 Seconds
• Rate Rise 2 (2-Stage Program)	Range: 900 C to 1025 C
• Hold Time 2 (2-Stage Program)	Range: 0 to 4 Minutes

    Rotate the **Selector Knob** to select the setting, then push the **Selector Knob** OR press the **Next** button to store the parameter.

19. Release Vacuum

    This parameter controls when the vacuum is released, and either air or argon (If Use Argon = Yes) is allowed to enter the muffle. The selections are made by rotating the **Selector Knob** as in the example below. The range will be different depending on the values already put into the program.

• Rate Rise (1)	Range: 425 C to 900 C
• Hold Time (1)	Range: 0 to 30 Seconds
• Rate Rise 2 (2-Stage Program)	Range: 900 C to 1025 C
• Hold Time 2 (2-Stage Program)	Range: 6 Seconds to 4 Minutes
• When Table Opens	

    Rotate the **Selector Knob** to select the setting, then push the **Selector Knob** OR press the **Next** button to store the parameter. This is the final parameter. You will automatically be returned to the Main Menu.

Press Firing Cycle Program
(Pro Press 200 only)

The following procedures describe how to enter a pressing program:

1. Press the **Main Menu** button:
2. Select the **CHANGE PROGRAM** Item and push the **Selector Knob** OR press the **Next** button.
3. Turn the **Selector Knob** until **ADD/EDIT PROGRAM** is displayed.
4. Push the **Selector Knob** OR press the **Next** button.
5. A cursor pointing to the current program number will be displayed. If there is a name displayed after the program number this is a pre-existing program which you may Edit by selecting it.

   To Add a program, rotate the **Selector Knob** to find the program number you want to add your new program into. If you select a program number that already has a program entered, you may overwrite the existing program with the new one.

6. Push the **Selector Knob** OR press the **Next** button to select a program for Addition or Editing. The display will present the stage type selection as below:

```
     * Add/Edit Program *
Enter Program Name
 001 –
```

   If the program you wish to Add requires only a single Rate Rise and Hold Temperature, select 1-Stage. If the program requires an initial Rate Rise and Hold Temperature, followed by a secondary Rate Rise and Hold Temperature, select 2-Stage. Push the **Selector Knob** OR press the **Next** button to select the program type.

7. The display will change as shown below:

```
     * Add/Edit Program *
Enter Program Name
 008 –
```

   The ^ symbol under the position identifies the current character being entered. Rotate the **Selector Knob** to bring up the desired character, then push the **Selector Knob** OR press the **Next** button to advance to the next character in the Program Name. You may enter up to 15 characters. If you do not require all 15 characters then simply continue to press the **Next** button until the cursor is all the way to the right side and the display changes to the one below:

```
Select Type
   1–stage
   2–stage
> Press
```

8. Entry Temperature

   Entry Temperature is the temperature at which the table will close completely.

   The range of values is 25° C (77° F) to a maximum of 980° C (1796° F).

   Rotate the **Selector Knob** to select the temperature value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

9. Rate Rise

   Rate Rise is the number of degrees per minute the temperature will rise after the table has closed.

   The range of values is 0° C/Minute (0° F) to a maximum of 100° C/Minute (180° F).

   Rotate the **Selector Knob** to select the heat rate value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

10. Hold Temperature

    Hold Temperature is the final, highest temperature in a 1-Stage Program, or an intermediate stopover temperature in a 2-Stage Program.

    The range of values is 400° C (752° F) to a maximum of 1200° C (2192° F).

    Rotate the **Selector Knob** to select the temperature value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

11. Hold Time

    HOLD TIME is displayed. This is the amount of time desired to hold the porcelain at the final temperature, before the furnace begins to press.

    The range of values is 00 minutes, 00 seconds, to a maximum of 99 minutes.

    Rotate the **Selector Knob** to select the time value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

NOTE: IF YOU ARE ADDING A 2-STAGE PROGRAM, THE RATE RISE 2, FOLLOWED BY THE HOLD TEMPERATURE 2, AND THE HOLD TIME 2 PARAMETERS WILL APPEAR HERE. IF NOT, THE TABLE DOWN TEMPERATURE WILL APPEAR NEXT.

NOTE: RE-PRESS IS SELECTED IN THE CALIBRATE OVEN SECTION OF THIS MANUAL, USING PASSWORD 315.

12. Fusing Adjustment Parameter

Fuse Adjust? > Underfires

IMPORTANT NOTE: THE FUSING ADJUSTMENT PROGRAM PARAMETER IS SIMILAR TO THE HIGH FUSING ADJUST AND LOW FUSING ADJUST FUNCTIONS FROM THE SPECIAL FUNCTIONS MENU IN THAT ANY VALUE ENTERED HERE WILL EITHER ADD TO, OR SUBTRACT FROM, THE HOLD TEMPERATURE PARAMETER IN THE PROGRAM. THE PROGRAM LEVEL FUSE ADJUST PARAMETER ADJUSTS THE HOLD TEMPERATURE ONLY FOR THE PROGRAM IT IS ENTERED IN, WHERAS THE SPECIAL FUNCTIONS/ HIGH FUSING ADJUST AFFECTS ALL PROGRAMS WITH A HOLD TEMPERATURE >800° C (1472° F) AND THE SPECIAL FUNCTIONS/LOW FUSING ADJUST AFFECTS ALL PROGRAMS <800° C (1472° F).

Why do you need fusing adjustments?

The Program Level Fusing Adjust is useful for making minor adjustments to a single, specific Program without altering the original Program design.

The Special Functions High/Low Fusing Adjustments features are useful for matching the firing characteristics of two furnaces so that they fire identically, no matter which furnace you use.

Upon initial Program Addition, you will want to use the original Program parameters as directed, until your experience suggests a specific Program adjustment is indicated.

Select either **UNDERFIRES OR OVERFIRES** by rotating the **Selector Knob**, then push the **Selector Knob** OR press the **Next** button and leave the default value of 0 Degrees, push the **Selector Knob** OR press the **Next** button again. You can come back later and Edit the Program level Fusing Adjust parameter.

13. **PRESS TIME** or **RE-PRESS TIME** is now displayed.

- **PRESS TIME** — Turn the **Selector Knob** to select the amount of time required to press your ceramic material. This function allows control of the press time from 1—30 minutes, but does not give you RE-PRESS time. After selecting the correct amount of time; press the **Next** button or press the **Selector Knob** to enter the program.
- **RE-PRESS TIME** — This function is password protected and adds an additional four (4) minutes to the selected amount when entering parameters under Re-Press Time. To use this function, you must have selected it in the Special Functions section under Calibration (see page 17 of instructions). The press rod remains extended during this period with no pause between the amount of time selected in the parameters and the additional four (4) minutes of the re-press.

NOTE: THE PRESS ROD STAYS EXTENDED DURING AND BETWEEN BOTH THE INITIAL AND RE-PRESS TIMES.

14. Cool Time

    The Cool Time parameter specifies the length of time the table takes to go from the full up position to the full down position, with several intermediate pauses along the way.

    The range of values is 00 minutes, 00 seconds, to a maximum of 99 minutes.

    Rotate the **Selector Knob** to select the time value, then push the **Selector Knob** OR press the **Next** button to store the parameter.

Copy/Change a Program

The **Copy/Change** a program feature allows a program to be copied from one program number to another and then changed. This feature is very useful when there are only minor differences between programs.

Procedures:

1. Press the Main **Menu** button.
2. Select **Change Program**, push the **Selector Knob** OR press the **Next** button.
3. Turn the **Selector Knob** until **COPY/CHANGE PROG** is displayed. Push **Selector Knob** OR press the **Next** button to select this feature.
4. **COPY FROM:** is displayed. The second line displays a program number and name. Turn the **Selector Knob** to find the program to be copied. Push the **Selector Knob** OR press the **Next** button to continue.
5. **COPY TO:** is displayed. Turn the **Selector Knob** to select a location for the copied program. If a program that is already entered is selected, you will write over the existing program. Push the **Selector Knob** OR press the **Next** button.
6. At this point, changes to the program may be made in the same manner as described in the section Add a Program on page 19. Refer to that section for instructions specific to each type of firing program.

NOTE: THE NAME OF THE NEW PROGRAM MUST BE CHANGED BECAUSE THE FURNACE DOES NOT ALLOW DUPLICATE PROGRAM NAMES.

Move a Program

The **Move** program feature allows a program to be moved from one number to another. This feature is useful for grouping programs for operator convenience.

Procedure:

1. Press the Main **Menu** button.
2. Select **Change Program**, push the **Selector Knob** OR press **Next** button.
3. Turn the **Selector Knob** until **MOVE PROGRAM** is displayed. Push **Selector Knob** OR press **Next** button to select this feature.
4. **MOVE FROM:** is displayed. The second line displays a program number and name. Turn the **Selector Knob** to find the program you wish to move. Push the **Selector Knob** OR press **Next** button.
5. **MOVE TO:** is displayed. Turn the **Selector Knob** to find the program number you wish to move to. If you select a program that is all ready entered, you will write over the existing program. Push the **Selector Knob OR press the Next button** to finish. You will be returned to the Main Menu automatically.

Erase a Program

This feature allows you to erase a program from memory. The space occupied by any program erased will become available for adding a new program.

Procedure:

1. Press the Main **Menu** button.
2. Select **Change Program**, push the **Selector Knob** OR press **Next** button.
3. Turn the **Selector Knob** until **ERASE A PROGRAM** is displayed. Push the **Selector Knob** OR press **Next** button to select this feature.
4. **ERASE A PROGRAM:** is displayed. Turn the **Selector Knob** to find the program you wish to erase. Push the **Selector Knob** OR press **Next** button to continue.
5. **ERASE ??? NO** is displayed. Turn the **Selector Knob** to **YES** to erase this program or **NO** to abort. Push the **Selector Knob** OR press **Next** button to continue. You will be returned to the Main Menu automatically.

Print Programs

You can obtain a paper printout of your firing programs by saving them to the Flash Drive, then using the PC software supplied with the Pro Series furnace to print the programs.

Refer to the separate PC software User Manual for instructions on how to do this.

NOTE: SEE PAGE 14 FOR THE SECTION ON SAVING PROGRAMS TO FLASH DRIVE

Chapter Four — Run Program Menu

Turn the **Selector Knob** until the desired program is displayed. If the table has not been lowered, do so now.

Press the **Start Program** button to begin this program.

Continue through this chapter to learn all of the displays and features available while a program is running.

The Run Program mode allows you to run programs and to view programs as they are running.

NOTE: YOU MUST BURN THE MOISTURE OUT OF THE MUFFLE BEFORE FIRING THE FIRST TIME. SEE THE NOTATION UNDER "CHANGE IDLE TEMPERATURE" ON PAGE 10.

Running a Program – Repeat Programs

The furnace features a one-button repeat feature. If a program needs to be repeated, simply press the Selector Knob and the last program run will be repeated.

NOTE: THIS FEATURE IS DISABLED IF ANY SPECIAL FUNCTIONS HAVE BEEN ACCESSED OR IF THE CHANGE PROGRAM FEATURE HAS BEEN USED AFTER THE LAST PROGRAM WAS RUN.

Features and Displays Available While a Program is Running

The following illustration shows the display when a program is running:

```
<Prog No. – Prog. Name>
><Current Program Segment>
          <Program Time Remaining>
                HH:MM:SS

<Current muffle temperature>     <Current Vacuum
```

Rotating the Selector Knob while the Program is running will display additional information in four, successive screens:

The first alternate screen:

```
Target Temperature:                <XXXX C>

Actual Temperature:                <YYYY C>

Vacuum:                            <ZZZ CM>
```

The second alternate screen:

```
<Prog No. – Prog. Name>

Time Left:                         <HH:MM:SS>

Step Left:                         <HH:MM:SS>

NEXT = SKIP STEP
```

NOTE: IF THE NEXT BUTTON IS PRESSED FROM THIS SCREEN THE PROGRAM WILL SKIP TO THE NEXT PROGRAM SEGMENT.

The third alternate screen:

```
<Prog No. – Prog. Name>

Change This Program?



Press Knob = Continue
```

NOTE: IF THE SELECTOR KNOB IS PRESSED WHILE THIS SCREEN IS BEING VIEWED YOU WILL AUTOMATICALLY FIND YOURSELF IN THE PROGRAM EDIT MODE WITH THE THE FIRST PARAMETER DISPLAYED BEING THE NEXT PROGRAM SETTING AFTER THE CURRENTLY RUNNING SEGMENT. THIS FEATURE ALLOWS YOU TO ALTER THE PROGRAM WHILE IT IS RUNNING. AFTER THE PROGRAM FINISHES THIS RUN THE EDITED PARAMETERS WILL CHANGE BACK TO THE ORIGINALLY STORED VALUES. THE CHANGES YOU MAKE USING THIS ALTERNATE SCREEN, DURING A RUNNING PROGRAM WILL NOT BE PERMANENT.

The fourth alternate screen:

```
<Prog No. – Prog. Name>

Night Mode After?

>No

Next = Option Change
```

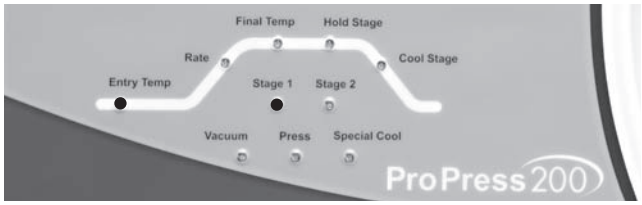
Pressing the Next button will toggle the "No" in the screen above to "Yes". Pressing the **Next** button a second time will change the "Yes" to "No".

The LED Graph

The LED graph follows the running Program's progress and provides a quick visual reference on how far the program has progressed.

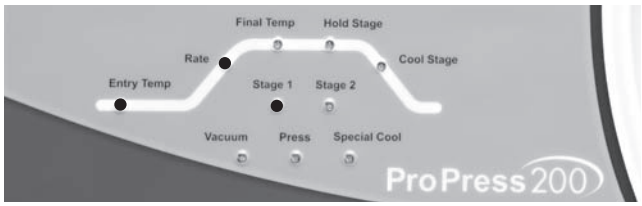
The illustrations below demonstrate the progression of LEDs on a 1-Stage Program:

>Pre Dry segment:

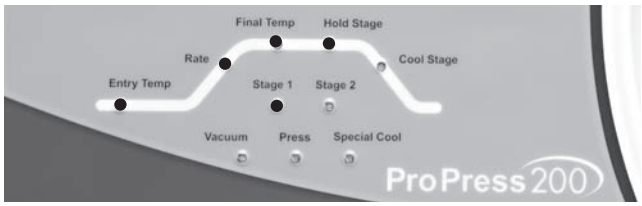


*Argon feature is only available on Pro 200
**Press function is only available on Pro Press 200

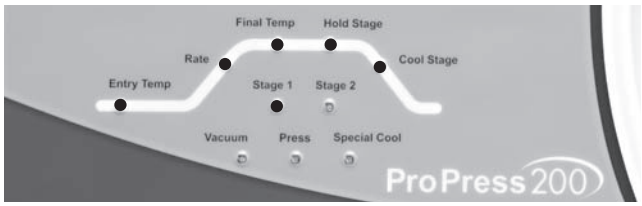
>Rate Rise segment:



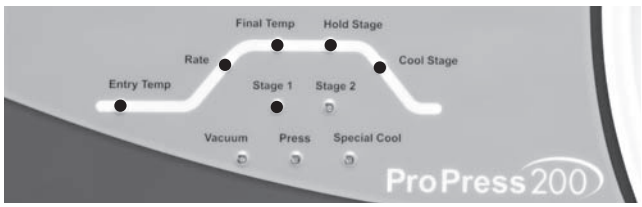
>Hold Temp segment:



>Closed Cool segment:

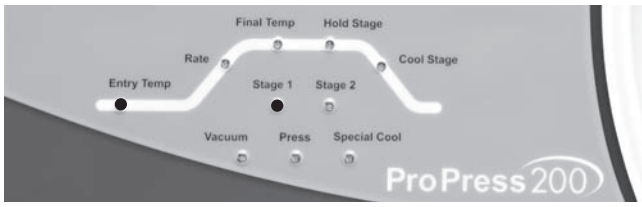


>Open Cool segment:

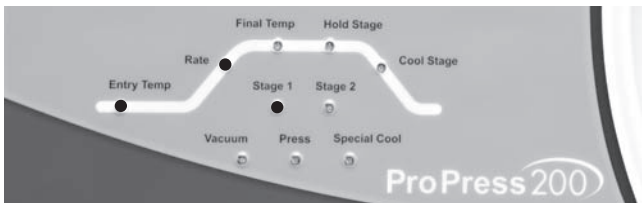


The illustrations below demonstrate the progression of LEDs on a 2-Stage Program:

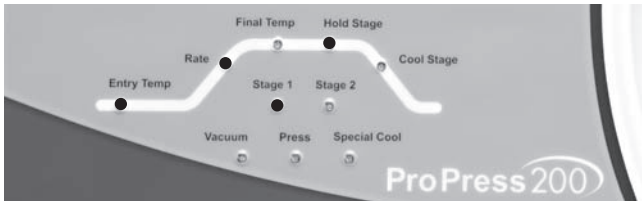
>Pre Dry segment:



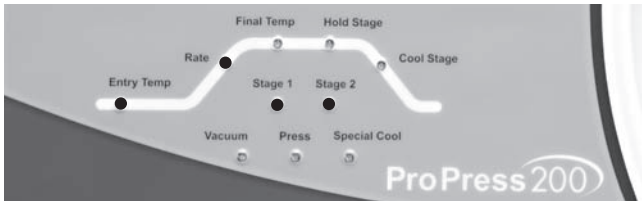
>First Rise segment:



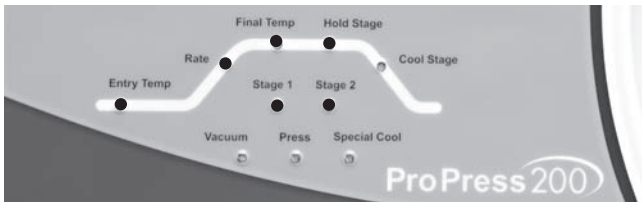
>First Hold segment



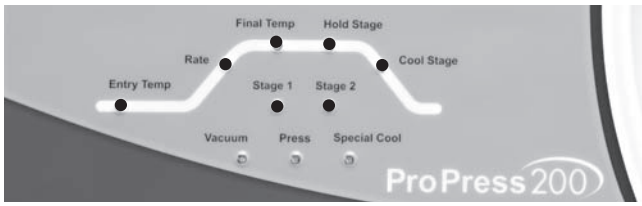
>Second Rise segment:



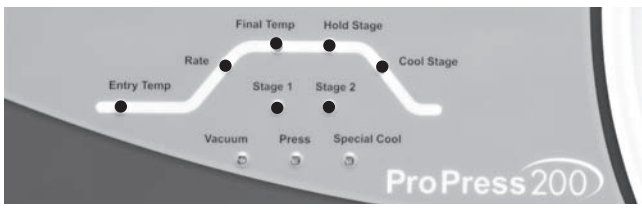
>Second Hold segment:



>Closed Cool segment:



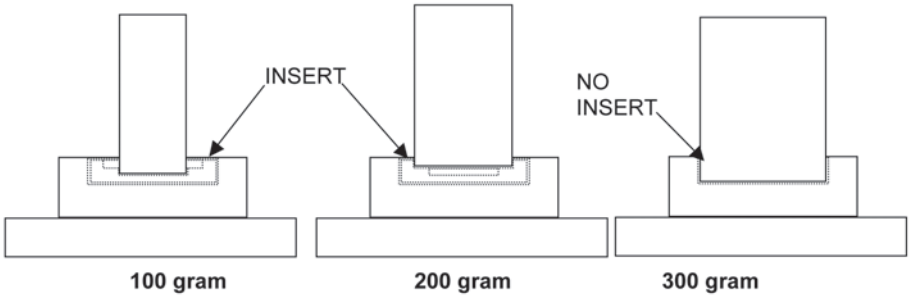
>Open Cool segment:



Running a Pressing Program

(Pro Press 200 only)

The Pro Press 200 can press into a 100, 200, or 300 gram investment mold. Configure the firing tray and press insert as show below for each size mold.



1. If the muffle temperature is below the entry temperature specified in the program, the table will raise to the closed position while the temperature rises. If the muffle temperature is above the entry temperature specified in the program, the table will remain down while the muffle cools. When the programmed entry temperature is reached, the furnace will begin to beep continuously.
2. After Pressing the Next button, the table will lower. Place the ring onto the firing table and press the Next button. The display will read:

Next = Raise table

3. The Pressing program will begin running.

NOTE: IF THE RE-PRESS FEATURE IS DISABLED, (CALIBRATION PASSWORD 315 SET TO "TIMED PRESS = YES") THEN THE PRESS TIME SPECIFIED IN THE PRESSING PROGRAM PARAMETERS WILL BE THE ACTUAL PRESS TIME. IF THE RE-PRESS FEATURE IS ENABLED, (CALIBRATION PASSWORD 315 SET TO "TIMED PRESS = NO") THEN THE PRESS TIME WILL BE FOUR MINUTES PLUS THE AMOUNT OF RE-PRESS TIME SPECIFIED.

Running a Re-Press Program

To run a Re-Press Program, Calibration Password number 315 must be set to "Timed Press = No"

Press the **Special Functions** Key, then rotate the **Selector knob** to the "Calibration Password" prompt and press the **Next** key. At the password entry prompt rotate the **Selector knob** until the display says "315" and press **Next** key.

Timed Press = No

Rotate the **Selector Knob** until the screen looks like the one above and press the **Next** button. This has activated the Re-Press mode.

1. If the muffle temperature is below the entry temperature specified in the program, the table will raise to the closed position while the temperature rises. If the muffle temperature is above the entry temperature specified in the program, the table will remain down while the muffle cools. When the entry temperature is reached, the furnace will begin to beep continuously. The display will read:

Next = Raise table

2. If the table is up, press the **Next** button, the table will lower. With the table in the down position, place the ring onto the firing table and press the **Next** button.
3. The Pressing program will begin running.
4. The temperature will now rise to the final temperature selected in the program. When the final temperature is reached, the hold time will begin.
5. When the hold time has expired the display will read as shown below. The furnace will begin the first press. The first press will continue for four minutes. After the first press has been completed re-pressing will occur if password 315 is activated.

   (See the Calibrate Oven section of this manual for further information.)

Pressing

6. When running a re-press program the furnace will automatically press for four minutes and then the additional "Re-Press" time. The display will now say **RE-PRESSING** and the furnace will begin to re-press the work for the amount of time specified in the program. When the re-press time has expired, the press will fully retract and the table will lower automatically.

Re-Pressing

Chapter Five — Maintenance

Cleaning The Furnace

Your new furnace may be cleaned by using a soft cloth and kitchen cleaners such as Fantastic® or Formula 409®. The front panel should be cleaned with a window cleaner such as Windex®.

Never clean the display window with a dry cloth or tissue as this will scratch the surface.

Always moisten the cleaning cloth with a cleaner such as Windex® or water.

Only clean the table with Windex® or water and a towel. Using other cleaners will harm the anodized surface. You will encounter problems if 409® or Fantastic ® is used to clean the table.

CAUTION!!! NEVER OPEN THE INTERIOR OF THE CHASSIS BEFORE FIRST REMOVING THE AC ELECTRICAL POWER CORD. THERE ARE DEADLY VOLTAGES INSIDE.

If, for any reason, you need to access the interior of the chassis for the purpose of minor servicing or replacement of components such as valve plungers, you must remove the chassis top plate via two screws on the rear of the chassis, then slide the chassis top plate towards the front of the furnace, then lift it up and set it aside. DO NOT remove the six screws on the bottom of the chassis in an attempt to remove the entire chassis top assembly as the bottom portion contains various electrical connections which will prevent the removal of the bottom or subject the electrical connections to damaging stress unless first disconnected from the top.

Argon Gas Requirements and Installation (Pro 200 only)

Enter your own program based on the manufacturer's instructions for the de-contamination material you are using.

USE ONLY ARGON GAS IN THE PRO 200 FURNACE. ATTACHING ANY FLAMMABLE OR NOXIOUS GAS TO THIS FURNACE COULD CAUSE EXPLOSION OR PERSONAL INJURY!

The best source of Argon is from your local bottled gas dealer. Usually the same dealer who furnishes Oxygen can also supply Argon. If not, he can recommend a reliable source. There are generally three grades of Argon available and your dealer can tell you the cost of each. Most furnace buyers use the lower cost commercial or industrial grade of Argon.

The same dealer should be able to supply a regulator for the bottled Argon. It should have a gauge showing the pressure inside the tank, and a smaller gauge showing the pressure applied to the outside system. The smaller gauge should read no more than 120 PSI maximum applied to the furnace.

The furnace requires between one and two PSI of Argon gas pressure. The use of more pressure will not improve the performance of the furnace. If you plan to use the Argon gas feature of this furnace you should also purchase a low-pressure Argon post regulator kit.

The low-pressure post regulator kit attaches to the regulator supplied by your gas supplier. Installation of the low pressure regulator is as follows:

DO NOT REMOVE THE REGULATOR SUPPLIED BY YOUR BOTTLED GAS SUPPLIER. THE LOW PRESSURE REGULATOR IS IN ADDITION TO THE REGULATOR SUPPLIED FOR YOUR BOTTLE.

1. The regulator supplied by the bottled gas company usually has a hose barb fitting to attach your hose. Remove this fitting.
2. The low-pressure regulator kit has a 1/4 inch male pipe thread fitting supplied on one end. The other end has a hose barb fitting for the supply hose to the furnace. Attach the male pipe thread end to the regulator on the bottle. The first gauge reads the bottle pressure, the second gauge reads the pre-regulator pressure, and the third gauge reads from 0 to 15 PSI. Do not attach the gas to the furnace yet.
3. Attach one end of the supplied hose to the low-pressure regulator. Do not attach the other end to the furnace yet.
4. Turn on the gas supply to the regulators.
5. Adjust the pre-regulator (supplied by your gas dealer) to around 20 PSI.
6. Pull the red locking ring on the low-pressure regulator towards the black **Selector Knob** on the bottom of the regulator to release the **Selector Knob**. Turn the black **Selector Knob** fully counterclockwise. The pressure should be 0.
7. Turn the black **Selector Knob** clockwise until the low-pressure gauge reads between 1.0 and 1.5 PSI.
8. Push the red locking ring up towards the gauge. This will lock the pressure setting.
9. Turn off the gas supply from the bottle. Be sure to turn off the supply when the gas is not being used to avoid the loss of gas due to fitting leaks.
10. Attach the hose to the Argon connector on the back of the furnace.

The furnace is now ready to run titanium and sintering programs, which require Argon gas.

NOTE: THE PRESSURE READING MAY JUMP HIGHER THAN 1.5 PSI BETWEEN FIRING AND AT TIMES DURING THE PURGING PROCESS. THIS IS NORMAL. PRESSURE MAY BE CHECKED DURING THE INERT COOL STEP IN THE FIRING SEQUENCE. AT THAT TIME ARGON IS BEING APPLIED AT A CONSTANT PRESSURE TO THE FURNACE. THE GAUGE SHOULD READ BETWEEN 1 AND 1.5 PSI. YOU MAY ADJUST THE REGULATOR AT THIS TIME

Trouble Shooting Guide

The Pro 200 and Pro Press 200 furnaces offer a number of self checks and warning messages that are designed to identify problems. Several of these are listed below:

Not Enough Vacuum

This error occurs if the furnace has not achieved its target vacuum level within 90 seconds. The program will abort automatically. Check the vacuum level setting. If the barometric pressure is unusual, you may have to call for fewer vacuums.

Duplicate Name

This error occurs if you have entered a program name that is identical to one all ready stored in memory. Press the Next button to continue. Enter a different name for this program.

Check Programs

The computer has detected a corruption of the memory in the area where programs are stored. Check all programs and correct any that have been changed.

Call for assistance.

Temp Cal Error

An error has been detected in the temperature calibration. Recalibrate the temperature to correct this problem.

Vac Cal Error

An error has been detected in the vacuum calibration. Recalibrate the vacuum temperature to correct this problem.

Call for assistance.

Max Temp Error

The computer has detected a temperature reading higher than the maximum allowed. The furnace will automatically shut the heating elements off. Turn the power off to reset this error. If the error occurs again call for assistance.

Thermocouple Error

This error occurs if the furnace detects an open thermocouple for a period of 25 seconds. The furnace will automatically turn off the heating elements. The furnace should be turned off and on again to clear this error. If the error occurs again, the thermocouple should be replaced.

Call for assistance.

Vacuum Test

1. Press the ⬆ **Up** arrow button to raise the table fully up. You cannot start a vacuum test until the table is fully up.
2. Select the **Special Functions** item.
3. Turn the **Selector Knob** to **Test Furnace**. Press the **Next** button.

```
* Special Functions
  Export Settings
  Import Settings
> Test Furnace
```

4. Turn the **Selector Knob** to **Vacuum Test**. Press the **Next** button. The vacuum test will automatically begin.

```
Test Furnace
> Vacuum Test
  Press Test
  Muffle Test
```

There will be three, numerical indicators on the screen, each has its own individual meaning.

- The number to the far left is the vacuum count. That is the vacuum sensor reading.

```
Vacuum Test On
  90     00CM       99
Next=Test Hold
```

```
Vacuum Test On
 223     65CM       99
Next=Test Hold
```

- The second in the middle is the centimeters or inches of mercury.
- The third is the current condition of the table 0 = moving, 99 = fully up or fully down.

5. Watch the numerical indicators as they rise.
6. The third value should stay at 99 and not change. Sometimes the value changes from 99 to 0 when the vacuum pump starts. This is normal and happens on some units.
7. Once the vacuum has reached 240, press the **Next** button. This will place the test in the hold position and allow you to watch for changes in vacuum value and readings.

   The acceptable loss is 2 cm within six minutes.
8. Once the test has been in hold for 6 minutes, press the **Next** button and the test will end.
9. If the numbers dropped outside the acceptable loss range, then the vacuum system has a leak and it must be repaired and recalibrated.

Fuses

The furnace contains two fuses:

- On the rear, just below and to the right of the power cord, there are two 12 Amp (115 Vac) Slo-Blo or two 7 Amp (220 Vac) Slo-Blo, .25 x 1.25 inch ceramic fuses.

If More Help is Needed

We hope you have many years of trouble-free service from your furnace. If you do have problems with the furnace, or if you have questions about the furnace not covered in the manual, contact your dealer or Whip Mix at:

www.whipmix.com
Phone: 800-626-5651
Fax: 502-634-4512
E-Mail: tops@whipmix.com

Be prepared to provide the following information:

1. Your name
2. Your lab's name and address
3. Your lab's phone number
4. Your lab's fax number
5. Furnace model and serial number (serial number can be found on the rear of the furnace)
6. Your question/problem

When you call, it would be helpful if you are near the furnace. The technician will probably ask you to run tests and report the results, or read the display while the test is running.

Replacement Parts

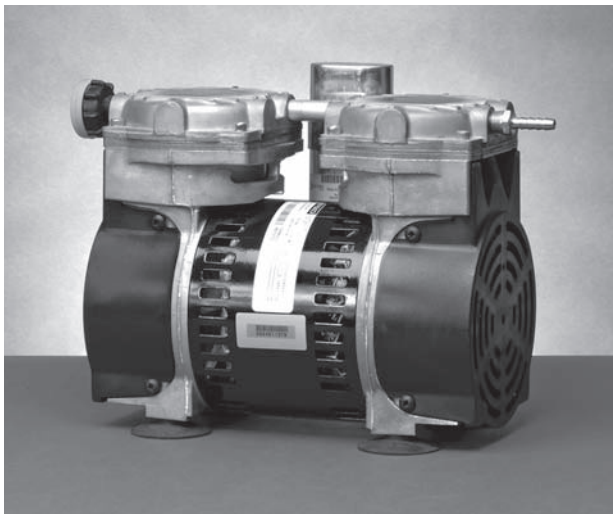
Part Number	Description
96004	Power Cord 115V
96008	Power Cord 230V
96001	Ceramic Plunger Rods Pkg of 2
96020	Investment Ringliner Pkg of 10
96147	Vacuum Valve Plunger 3 way
96070	Vacuum Valve Plunger 2 way
96094	Lift Limit Sensor
96021	Lift Belt
96025	Table
96309	Press Regulator with Quick disconnect
96012	Press Insert Trays
96013	Firing Tray with recess (Press)
96015	Firing Tray Regular (Pro 200 & Press)
96339	Encoder Assembly (Selector Knob Control)
96336	Key Pad Assembly
96341	Vacuum Sensor Assembly
96091	Flash Drive Pro 200
96098	Flash Drive Pro Press 200
96016	Fuses (115 VAC – 12 Amp) Pkg of 2
96092	Fuses (250 V – 7 Amp Slo-Blo) Pkg of 2

Note: Other replacement parts available. Contact TOPS at 800-626-5651 for assistance. **Must have serial number on unit to identify correct part.**

Technical Specifications

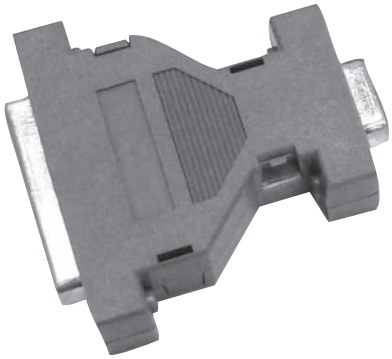
Power Supply	120 VAC ± 10% 50/60Hz
Power Consumption	1200W - Furnace Alone 1400W - With Pump
Shipping Weight	Pro 200 - 59 lbs. Pro Press 200 - 71 lbs.
Muffle Windings	Quartz Tubing
Muffle Chamber	3 3/4 W x 2 1/2 H x 3 3/4 D
Maximum Temperature	2200°F
Dimensions	Pro 200 11" W x 16"D x 21"H Pro Press 200 11"W x 16" D x 25"H

Pro Series Accessories

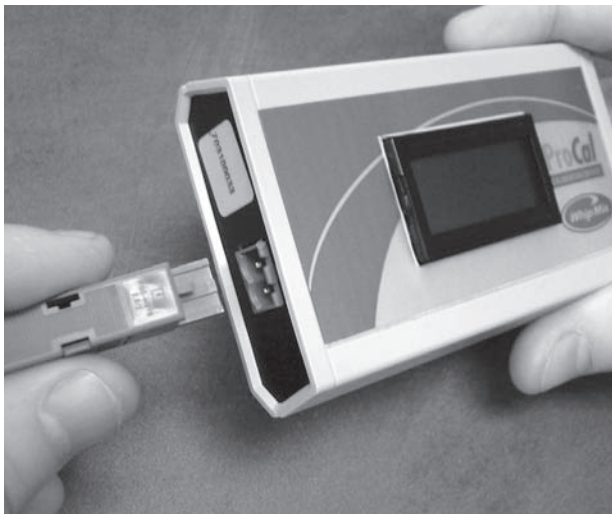


High-Efficiency Vacuum Pump

ProCheck Calibration Check Device



Pro Check Adaptor



Pro Cal

Fahrenheit to Centigrade

° F	° C	° F	° C	° F	° C	° F	° C
100	38	630	332	1,160	627	1,690	921
110	43	640	338	1,170	632	1,700	927
120	49	650	343	1,180	638	1,710	932
130	54	660	349	1,190	643	1,720	938
140	60	670	354	1,200	649	1,730	943
150	66	680	360	1,210	654	1,740	949
160	71	690	366	1,220	660	1,750	954
170	77	700	371	1,230	666	1,760	960
180	82	710	377	1,240	671	1,770	966
190	88	720	382	1,250	677	1,780	971
200	93	730	388	1,260	682	1,790	977
210	99	743	393	1,270	688	1,800	982
220	104	750	399	1,280	693	1,810	988
230	110	760	404	1,290	699	1,820	993
240	116	770	410	1,300	704	1,830	999
250	121	780	416	1,310	710	1,840	1,004
260	127	790	421	1,320	716	1,850	1,010
270	132	800	427	1,330	721	1,860	1,016
280	138	810	432	1,340	727	1,870	1,021
290	143	820	438	1,350	732	1,880	1,027
300	149	830	443	1,360	738	1,890	1,032
310	154	840	449	1,370	743	1,900	1,038
320	160	850	454	1,380	749	1,910	1,043
330	166	860	460	1,390	754	1,920	1,049
340	171	870	466	1,400	760	1,930	1,054
350	177	880	471	1,410	766	1,940	1,060
360	182	890	477	1,420	771	1,950	1,066
370	188	900	482	1,430	777	1,960	1,071
380	193	910	488	1,440	782	1,970	1,077
390	199	920	493	1,450	788	1,980	1,082
400	204	930	499	1,460	793	1,990	1,088
410	210	940	504	1,470	799	2,000	1,093
420	216	950	510	1,480	804	2,010	1,099
430	221	960	516	1,490	810	2,020	1,104
440	227	970	521	1,500	816	2,030	1,110
450	232	980	527	1,510	821	2,040	1,116
460	238	990	532	1,520	827	2,050	1,121
470	243	1,000	538	1,530	832	2,060	1,127
480	249	1,010	543	1,540	838	2,070	1,132
490	254	1,020	549	1,550	843	2,080	1,138
500	260	1,030	554	1,560	849	2,090	1,143
510	266	1,040	560	1,570	854	2,100	1,149
520	271	1,050	566	1,580	860	2,110	1,154
530	277	1,060	571	1,590	866	2,120	1,160
540	282	1,070	577	1,600	871	2,130	1,166
550	288	1,080	582	1,610	877	2,140	1,171
560	293	1,090	588	1,620	882	2,150	1,177
570	299	1,100	593	1,630	888	2,160	1,182
580	304	1,110	599	1,640	893	2,170	1,188
590	310	1,120	604	1,650	899	2,180	1,193
600	316	1,130	610	1,660	904	2,190	1,199
610	321	1,140	616	1,670	910	2,200	1,204
620	327	1,150	621	1,680	916	2,210	1,210

Centigrade to Fahrenheit

° C	° F	° C	° F	° C	° F	° C	° F	° C	° F
35	95	300	572	565	1,049	830	1,526	1,095	2,003
40	104	305	581	570	1,058	835	1,535	1,100	2,012
45	113	310	590	575	1,067	840	1,544	1,105	2,021
50	122	315	599	580	1,076	845	1,553	1,110	2,030
55	131	320	608	585	1,085	850	1,562	1,115	2,039
60	140	325	617	590	1,094	855	1,571	1,120	2,048
65	149	330	626	595	1,103	860	1,580	1,125	2,057
70	158	335	635	600	1,112	865	1,589	1,130	2,066
75	167	340	644	605	1,121	870	1,598	1,135	2,075
80	176	345	653	610	1,130	875	1,607	1,140	2,084
85	185	350	662	615	1,139	880	1,616	1,145	2,093
90	194	355	671	620	1,148	885	1,625	1,150	2,102
95	203	360	680	625	1,157	890	1,634	1,155	2,111
100	212	365	689	630	1,166	895	1,643	1,160	2,120
105	221	370	698	635	1,175	900	1,652	1,165	2,129
110	230	375	707	640	1,184	905	1,661	1,170	2,138
115	239	380	716	645	1,193	910	1,670	1,175	2,147
120	248	385	725	650	1,202	915	1,679	1,180	2,156
125	257	390	734	655	1,211	920	1,688	1,185	2,165
130	266	395	743	660	1,220	925	1,697	1,190	2,174
135	275	400	752	665	1,229	930	1,706	1,195	2,183
140	284	405	761	670	1,238	935	1,715	1,200	2,192
145	293	410	770	675	1,247	940	1,724	1,205	2,201
150	302	415	779	680	1,256	945	1,733	1,210	2,210
155	311	420	788	685	1,265	950	1,742	1,215	2,219
160	320	425	797	690	1,274	955	1,751	1,220	2,228
165	329	430	806	695	1,283	960	1,760	1,225	2,237
170	338	435	815	700	1,292	965	1,769	1,230	2,246
175	347	440	824	705	1,301	970	1,778	1,235	2,255
180	356	445	833	710	1,310	975	1,787	1,240	2,264
185	365	450	842	715	1,319	980	1,796	1,245	2,273
190	374	455	851	720	1,328	985	1,805	1,250	2,282
195	383	460	860	725	1,337	990	1,814	1,255	2,291
200	392	465	869	730	1,346	995	1,823	1,260	2,300
205	401	470	878	735	1,355	1,000	1,832	1,265	2,309
210	410	475	887	740	1,364	1,005	1,841	1,270	2,318
215	419	480	896	745	1,373	1,010	1,850	1,275	2,327
220	428	485	905	750	1,382	1,015	1,859	1,280	2,336
225	437	490	914	755	1,391	1,020	1,868	1,285	2,345
230	446	495	923	760	1,400	1,025	1,877	1,290	2,354
235	455	500	932	765	1,409	1,030	1,886	1,295	2,363
240	464	505	941	770	1,418	1,035	1,895	1,300	2,372
245	473	510	950	775	1,427	1,040	1,904	1,305	2,381
250	482	515	959	780	1,436	1,045	1,913	1,310	2,390
255	491	520	968	785	1,445	1,050	1,922	1,315	2,399
260	500	525	977	790	1,454	1,055	1,931	1,320	2,408
265	509	530	986	795	1,463	1,060	1,940	1,325	2,417
270	518	535	995	800	1,472	1,065	1,949	1,330	2,426
275	527	540	1,004	805	1,481	1,070	1,958	1,335	2,435
280	536	545	1,013	810	1,490	1,075	1,967	1,340	2,444
285	545	550	1,022	815	1,499	1,080	1,976	1,345	2,453
290	554	555	1,031	820	1,508	1,085	1,985	1,350	2,462
295	563	560	1,040	825	1,517	1,090	1,994	1,355	2,471